**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. (Currently Amended) A method of producing molecularly ~~Molecularly~~ imprinted microspheres comprising specific binding sites, ~~obtainable by~~ comprising polymerising functional monomers and crosslinkers in a reaction solvent in the presence of print molecules as templates in a surfactant-free precipitation polymerisation process, which print molecules are capable of forming non-covalent or reversible covalent interactions with said functional monomers.

2-22. (Cancel)

23. (New) A method according to claim 1, wherein the total volume of polymerisable monomers and crosslinkers is kept in the range of about 0.01 to 20% of the volume of the reaction solvent.

24. (New) A method according to claim 1, wherein the reaction solvent is aqueous or non-aqueous.

25. (New) A method according to claim 1, wherein said reaction solvent is composed of a single solvent component or of multiple solvent components.

26. (New) A method according to claim 1, wherein said functional monomers have the same functionality.

27. (New) A method according to claim 1, wherein said functional monomers have different functionality.

28. (New) A method according to claim 1, wherein the solubility of the print molecules in the reaction solvent is adjusted by changing the composition of the reaction solvent.

29. (New) A method according to claim 1, wherein the polymerisation is induced by heat, UV radiation, γ radiation and/or chemically.

30. (New) A method according to claim 1, wherein said polymerisation process is a free-radical polymerisation process, an ionic polymerisation process, a coordination polymerisation process of a step growth polymerisation process.

31. (New) A method according to claim 1, wherein a desired size of the microspheres is achieved by controlling the nucleation and particle growth process.

32. (New) A method according to claim 31, wherein the control of the nucleation and particle growth process is achieved by adjusting the composition of the functional monomer/crosslinker/solvent system and/or the reaction conditions during the polymerisation in order to change the solubility of the growing polymer chains.

33. (New) A method according to claim 31, wherein the control of the nucleation and particle growth process is intended to avoid aggregation of the microspheres.

34. (New) A method according to claim 1, wherein the size of the microspheres as produced is in the range of 0.01-10μm.

35. (New) A method according to claim 1, wherein the reaction conditions are controlled so that the microspheres become monodisperse.

36. (New) A method for screening of chemical libraries, for catalysis, for facilitating synthesis, for analyte determination using ligand binding assays and/or agglutination assays, for therapeutic purposes, or for controlled release comprising using the molecularly imprinted microspheres according to claim 1.

37. (New) A method for conducting capillary electrophoresis, capillary electrochromatography or HPLC analysis comprising using the molecularly imprinted microspheres according to claim 1 as the stationary phase or as a modifier.

38. (New) A biomimetic sensor comprising the molecularly imprinted microspheres according to claim 1 as a recognition component.

39. (New) An affinity-labelled probe for targeting cells or other biological material comprising the molecularly imprinted microspheres according to claim 1.

40. (New) A composite material comprising the molecularly imprinted microspheres according to claim 1 as a binding entity.